

AMENDATORY SECTION (Amending WSR 99-17-117, filed 8/18/99, effective 12/1/99)

WAC 296-54-51130 Hearing protection. The employer must provide hearing protection when required by (~~the general occupational health standards, chapter 296-62 WAC~~) chapter 296-817 WAC, Noise.

AMENDATORY SECTION (Amending WSR 01-11-038, filed 5/9/01, effective 9/1/01)

WAC 296-56-60001 Scope and applicability. (1) The rules included in this chapter apply throughout the state of Washington, to any and all waterfront operations under the jurisdiction of the department of labor and industries.

(2) These minimum requirements are promulgated in order to augment the general safety and health standards, and any other safety and health standards promulgated by the department of labor and industries which are applicable to all places of employment under the jurisdiction of the department of labor and industries. The rules of this chapter, and the rules of chapters 296-24, 296-62 and 296-800 WAC are applicable to all longshore, stevedore and related waterfront operations: Provided, That such rules shall not be applicable to those operations under the exclusive safety jurisdiction of the federal government.

(3) The provisions of this chapter shall prevail in the event of a conflict with, or duplication of, provisions contained in chapters 296-24, 296-62 and 296-800 WAC. Specific standards which are applicable include, but are not limited to:

(a) Electrical--Chapter 296-24 WAC Part L, and WAC 296-800-280.

(b) Toxic and hazardous substances are regulated by chapter 296-62 WAC. Where references to this chapter are given they are for informational purposes only. Where specific requirements of this chapter conflict with the provisions of chapter 296-62 WAC this chapter prevails. Chapter 296-62 WAC does not apply when a substance or cargo is contained within a manufacturer's original, sealed, intact means of packaging or containment complying with the department of transportation or International Maritime Organization requirements.

(c) (~~Hearing conservation--Chapter 296-62 WAC Part K~~) Noise--Chapter 296-817 WAC.

(d) Standards for commercial diving operations--Chapter 296-37 WAC.

(e) Safety requirements for scaffolding--Chapter 296-24 WAC Part J-2.

(f) Safe practices of abrasive blasting operations--Chapter 296-24 WAC Part H-2.

(g) Access to employee exposure and medical records--Chapter 296-62 WAC Part B.

(h) Respiratory protection--Chapter 296-62 WAC Part E.

(i) Safety standards for grain handling facilities--Chapter 296-99 WAC.

(j) Chemical hazard communication program--WAC 296-800-170.

(k) Asbestos--Chapters 296-62 Part I-1 and 296-65 WAC.

(l) Permit - required confined spaces and confined space--Chapter 296-62 WAC Part M.

(m) Servicing multi-piece and single-piece rim wheels--Chapter 296-24 WAC Part D.

(n) First-aid requirements--WAC 296-800-150.

(o) Employee emergency plans and fire prevention plans--Chapter 296-24 WAC Part G-1.

(4) The provisions of this chapter do not apply to the following:

(a) Fully automated bulk coal handling facilities contiguous to electrical power generating plants.

(b) Facilities subject to the regulations of the office of pipeline safety regulation of the materials transportation bureau, department of transportation, to the extent such regulations apply.

(5) WAC 296-62-074 shall apply to the exposure of every employee to cadmium in every employment and place of employment covered by chapter 296-56 WAC in lieu of any different standard on exposures to cadmium that would otherwise be applicable by virtue of those sections.

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AMENDATORY SECTION (Amending Order 84-24, filed 12/11/84)

WAC 296-155-145 Occupational noise exposure. The occupational noise exposure requirements of ~~((the general occupational health standards,))~~ chapter ~~((296-62))~~ 296-817 WAC, ~~((shall))~~ Noise, apply.

AMENDATORY SECTION (Amending Order 83-34, filed 11/30/83)

WAC 296-155-210 Hearing protection. The hearing protection requirements of ~~((the general occupational health standards, chapter 296-62 WAC, shall))~~ chapter 296-817 WAC, Noise, apply.

AMENDATORY SECTION (Amending WSR 98-02-006, filed 12/26/97, effective 3/1/98)

WAC 296-304-08009 Powder-actuated fastening tools. (1) The employer must ensure powder-actuated fastening tools are used, designed, constructed, and maintained according to the requirements of WAC 296-24-663, Safety requirements for powder-actuated fastening systems.

(2) The employer must ensure that employees using powder-actuated fastening tools are protected by personal protective equipment that meets the requirements of WAC 296-304-09005 (1) and (2). The employer must also meet the ~~((hearing conservation))~~ requirements of ~~((the general occupational health standards,))~~ chapter ~~((296-62))~~ 296-817 WAC, ~~((Part K))~~ Noise.

AMENDATORY SECTION (Amending WSR 98-02-006, filed 12/26/97, effective 3/1/98)

WAC 296-304-09009 Hearing protection. The employer must meet the ~~((hearing conservation))~~ requirements of ~~((the general occupational health standards,))~~ chapter ~~((296-62))~~ 296-817 WAC, ~~((Part K))~~ Noise.

WAC 296-305-02005 Hearing protection. ~~((1) Fire departments shall administer a continuing effective hearing conservation program, as described in chapter 296-62 WAC, Part K, Hearing Conservation, except for WAC 296-62-09031 (2)(b), whenever employees noise exposure equal or exceed an eight-hour time-weighted average (TWA) sound level of 85 decibels (dBA) measured on the A scale weighing at slow response or, equivalently, a noise dose of fifty percent.~~

~~(2) For the purpose of a hearing conservation program, employee noise exposure shall be computed in accordance with WAC 296-62-09055, Appendix E, Noise exposure computation, without regard to any attenuation provided by the use of personal protective equipment.~~

~~(3) The hearing conservation program shall be provided at no cost to the employee.~~

~~(4) Hearing protection shall be provided for and used by all members when exposed to an eight-hour time weighted average of 85 dBA or greater or when exposed to noise in excess of 115 dBA from power tools, engine warm ups, drafting, or other such activities, except in situations where the use of such protective equipment would create an additional hazard to the user such as in fire suppression.~~

~~(5) Audiometric test shall be performed by a licensed or certified audiologist, otolaryngologist, or other qualified physician, or by a technician who is certified by the council of accreditation in occupational hearing conservation. A technician who performs audiometric tests must be responsible to an audiologist, otolaryngologist or other qualified physician.~~

~~(6) The fire department shall institute a hearing conservation training program for all employees and shall ensure their participation in such programs, meeting the minimum requirements specified in chapter 296-62 WAC, Part K.~~

~~(7) The use of personal protective equipment to limit noise exposure shall be considered as an interim approach until the noise levels produced by vehicles, warning devices, and radios can be reduced. Protective muffs are recommended for fire fighters, due to the difficulties of proper fit and insertion of ear plugs.~~

~~(8) Noise levels in new fire apparatus purchased after the effective date of this chapter, shall not exceed at any seated position to be a maximum of 90 dBA when measured, as specified in this section, without any warning device in operation.~~

~~(a) Interior noise levels shall be measured with the vehicle in motion at the speed that produces the highest noise level, up to 55 mph.~~

~~(b) All windows should be closed and the noise level shall be measured in each passenger area.~~

~~(c) For existing apparatus, compliance with this section will be required within two years of the effective date of this chapter.~~

~~_____ Note: In order to reduce noise levels, the following engineering controls may achieve such a reduction:~~

- ~~_____ a. Move siren speakers and air horns down onto the front bumper.~~
- ~~_____ b. Respond with windows closed.~~
- ~~_____ c. Install sound attenuating insulation in cabs of apparatus.~~
- ~~_____ d. Lower the pitch of siren and air horns.~~
- ~~_____ e. Improve radio equipment with higher clarity and less output volume.~~

~~(9) For existing fire apparatus that cannot be brought into compliance, the employer shall be required to provide members with hearing protectors.~~

~~(10) The fire department shall provide training in the use and care of~~

~~all hearing protectors provided to employees.~~

~~(11) The training program shall be repeated annually for each employee included in the hearing conservation program.~~

~~(12) Information provided in the training program shall be updated to be consistent with changes in protective equipment and work processes.~~

~~Additional References: Chapter 296-62 WAC, Part K.))~~ Fire departments must address noise issues as required by chapter 296-817 WAC, Noise.

Note: Although noise levels may exceed the 115 dBA ceiling limit for noise exposures during structural fire fighting activities, hearing protection that will survive these conditions and not interfere with other essential gear may not always be available. Fire departments must consider daily noise exposures and exposures to noise outside direct fire fighting activities when selecting hearing protection and may use less protection during direct fire protection when adequate hearing protection is not technically feasible.

AMENDATORY SECTION (Amending WSR 01-11-038, filed 5/9/01, effective 9/1/01)

WAC 296-305-05503 Summary of training requirements. (1) Training on ~~((hearing conservation shall))~~ noise must conform to chapter ~~((296-62))~~ 296-817 WAC, ~~((Part K))~~ Noise, and WAC 296-305-02005.

(2) Training on medical procedures shall conform to WAC 296-305-02501.

(3) Training on respiratory equipment shall conform to chapter 296-62 WAC, Part E, Respiratory protection, and WAC 296-305-04001.

(4) Training on employee right-to-know procedures shall conform to WAC 296-800-170, chemical hazard communication program.

(5) Training on overhaul procedures and operations shall conform to WAC 296-305-05001.

(6) Training on wildland fires shall conform to WAC 296-305-07001 through 296-305-07019.

(7) Training on confined space entry and/or rescue shall conform to chapter 296-62 WAC, Part M, Permit-required confined spaces and WAC 296-305-05003.

(8) Live fire training in structures shall conform to NFPA 1403 and this section.

(9) The employer shall provide training and education for all members commensurate with those duties and functions that members are expected to perform. Such training and education shall be provided to members before they perform emergency activities. Fire service leaders and training instructors shall be provided with training and education which is more comprehensive than that provided to the general membership of the fire department.

(10) The employer shall assure that training and education is conducted frequently enough to assure that each member is able to perform the member's assigned duties and functions satisfactorily and in a safe manner so as not to endanger members or other employees. All members shall be provided with training at least annually. In addition, members who are expected to perform interior structural fire fighting shall be provided with an education session or training at least quarterly.

Chapter 296-817 WAC

NOISE

HEARING LOSS PREVENTION PROGRAM

NEW SECTION

WAC 296-817-010 Summary and scope.

Your responsibility:

To prevent employee hearing loss by minimizing and protecting them from noise exposures.

You must:

Conduct employee noise exposure monitoring

WAC 296-817-01005

Reduce noise where employee exposures are at or above 90 dBA TWA₈

WAC 296-817-01010

Make sure employees use hearing protection when exposed to noise exposures greater than 85 dBA TWA₈

WAC 296-817-01015

Make sure exposed employees receive training about noise and hearing protection

WAC 296-817-01020

Make sure warning signs are posted for areas with noise levels above 115 dBA

WAC 296-817-01025

Arrange for oversight of audiometric testing

WAC 296-817-01030

Identify and correct deficiencies in your hearing loss prevention program

WAC 296-817-01035

Document your hearing loss prevention activities

WAC 296-817-01040.

Scope.

The purpose of this chapter is to:

☛ Prevent employee hearing loss by minimizing employee noise exposures

AND

☛ Make sure employees exposed to noise are protected.

These goals are accomplished by:

☛ Measuring and computing the employee noise exposure from all equipment and machinery in the workplace, as well as any other noise sources in the work area

☛ Protecting employees from noise exposure by using feasible noise controls that do not rely primarily on individual employee behavior

☛ Making sure employees use hearing protection, if you cannot feasibly control the noise

☛ Training employees about hearing loss prevention

☛ Evaluating your hearing loss prevention efforts by tracking employee hearing or periodically reviewing controls and protection

☛ Making appropriate corrections to your program.

Use Table 1 to help you determine the hearing loss prevention requirements for your workplace:

Table 1
Noise Evaluation Criteria

Criteria	Description	Requirements
85 dBA TWA ₈	Full-day employee noise exposure dose. If you have one or more employees above this level, you must have a hearing loss prevention program	<ul style="list-style-type: none">– Hearing protection– Training– Audiometric testing

90 dBA TWA ₈	Full-day employee noise exposure dose. If you have one or more employees above this level, you must reduce employee noise exposures in the workplace	Noise controls
115 dBA measured using slow response	Extreme noise level (greater than one second in duration)	– Hearing protection – Signs posted in work areas warning of exposure
140 dBC measured using fast response	Extreme impulse or impact noise (less than one second in duration)	Hearing protection

NEW SECTION

WAC 296-817-01005 Conduct employee noise exposure monitoring. You must:

☛ Conduct employee noise exposure monitoring to determine the employee's actual exposure when reasonable information indicates that any employee's exposure may equal or exceed 85 dBA TWA₈.

Note: Examples of information or situations that can indicate possible exposures above 85 dBA TWA₈ include:

- ☛ Noise in the workplace that interferes with people speaking, even at close range
- ☛ Information from the manufacturer of equipment you use in the workplace that indicates high noise levels for machines in use
- ☛ Reports from employees of ringing in their ears or temporary hearing loss
- ☛ Warning signals or alarms that are difficult to hear
- ☛ Work near abrasive blasting or jack hammering operations
- ☛ Use of tools and equipment such as the following:
 - Heavy equipment or machinery
 - Fuel-powered hand tools
 - Compressed air-driven tools or equipment in frequent use
 - Power saws, grinders or chippers
 - Powder-actuated tools.

You must:

☛ Follow applicable guidance in WAC 296-817-020 when conducting noise exposure monitoring

☛ Make sure your sampling for noise exposure monitoring identifies:

– All employees exposed at or above the following:

Ⓢ 85 dBA TWA₈ (noise dosimetry, providing an average exposure over an eight-hour time period)

Ⓢ 115 dBA (slow response sound level meter, identifying short-term noise exposures)

Ⓢ 140 dBC (fast response sound level meter, identifying almost instantaneous noise exposures).

☛ Provide exposed employees and their representatives with an opportunity to observe any measurements of employee noise exposure that are conducted

☛ Notify each employee exposed at or above 85 dBA TWA₈ of the monitoring results within five working days

☛ Conduct additional noise monitoring whenever a change in production, process, equipment or controls, may reasonably be expected to result in:

– Additional employees exposed at or above 85 dBA TWA₈

– Employees exposed to higher level of noise requiring more effective hearing protection.

Note: Conditions that may be expected to increase exposure include:

- ☛ Adding machinery to the work area
- ☛ Increasing production rates
- ☛ Removal or deterioration of noise control devices

- ⚙ Increased use of noisy equipment
- ⚙ Change in work schedule
- ⚙ Change of job duties.

NEW SECTION

WAC 296-817-01010 Reduce noise where employee exposures are at or above 90 dBA TWA₈.

You must:

- ⚙ Reduce noise, to the degree feasible, wherever employee noise exposure equals or exceeds 90 dBA TWA₈.

- ⚙ Use control methods that do not rely primarily on individual employee behavior to reduce noise exposures.

Note: Once noise exposures are brought below 90 dBA TWA₈, no further reduction is required although hearing protection may be required. However, further reduction of noise may reduce the need for other hearing loss prevention requirements.

NEW SECTION

WAC 296-817-01015 Make sure employees use hearing protection when exposed to noise exposures greater than 85 dBA TWA₈.

You must:

- ⚙ Make sure employees wear hearing protectors that will provide sufficient protection when exposed at or above:

- 85 dBA TWA₈ (noise dosimetry, providing an average exposure over an eight-hour time period)
- 115 dBA (slow response sound level meter, identifying short-term noise exposures)
- 140 dBC (fast response sound level meter, identifying almost instantaneous noise exposures).

- ⚙ Provide employees with an appropriate selection of hearing protectors:

- The selection must include at least two distinct types (such as molded earplugs, foam earplugs, custom-molded earplugs, earcaps, or earmuffs) for each exposed employee and must be sufficient to cover:

- ③ Different levels of hearing protection needed in order to reduce all employee exposures to a level below 85 dBA TWA₈.

- ③ Different sizes

- ③ Different working conditions.

- ③ Consider requests of the employees regarding:

- ③ Physical comfort

- ③ Environmental conditions

- ③ Medical needs

- ③ Communication requirements.

Note: Hearing protector selection should include earplugs, earcaps and earmuffs.

You must:

- ⚙ Provide hearing protection at no cost to employees

- ⚙ Supervise employees to make sure that hearing protection is used correctly

☞ Make sure hearing protectors are:

- Properly chosen for fit
- Replaced as necessary.

☞ Make sure all hearing protection is sufficient to reduce the employee's equivalent eight-hour noise exposure to less than 85 dBA. When using the A-weighted exposure measurements, reported as "dBA TWA₈," the reduction in noise exposure by hearing protectors is given by Table 3:

Table 3
Effective Protection of Hearing Protectors

Type of hearing protection	Effective protection
Single hearing protection (earplugs, earcaps or earmuffs)	7 dB less than the manufacturer assigned noise reduction rating (NRR); for example, earplugs with an NRR of 20 dB are considered to reduce employee exposures of 95 dBA TWA ₈ to 82 dBA TWA ₈
Dual hearing protection (earplug and earmuff worn together)	2dB less than the higher NRR of the two protectors; for example, earplugs with an NRR of 20 dB and earmuffs with an NRR of 12 dB are considered to reduce employee exposures of 100 dBA TWA ₈ to 82 dBA TWA ₈

☞ In addition to protection based on daily noise dose, make sure hearing protection has an NRR of at least 20 dB when exposures involve noise greater than or equal to 115 dBA (slow response sound level meter) or 140 dBC (fast response sound level meter).

Note: You may also evaluate hearing protection by using the other methods given in the NIOSH *Compendium of Hearing Protection* (NIOSH Publication No. 95-105). These methods require additional monitoring and are more complex, but provide a more thorough evaluation of protection. This may be useful in cases where communication is critical or for evaluating hearing protection for employees with hearing impairment.

NEW SECTION

WAC 296-817-01020 Make sure exposed employees receive training about noise and hearing protection.

You must:

- ☞ Train all employees exposed to noise at or above 85 dBA TWA₈
- ☞ Provide training when an employee is first assigned to a position involving noise exposure at or above 85 dBA TWA₈ **and** at least annually after that
- ☞ Update information provided in the training program to be consistent with changes in controls, hearing protectors and work processes
- ☞ Make sure your noise and hearing protection training includes:
 - The effects of noise on hearing (including both occupational and nonoccupational exposures)
 - Noise controls used in your workplace
 - The purpose of hearing protectors: The advantages, disadvantages, and attenuation of various types
 - Instructions about selecting, fitting, using, and caring for hearing protection
 - The purpose and procedures for program evaluation including audiometric testing and hearing protection auditing when you choose to rely upon auditing (see WAC 296-817-040)
 - The employees' right to access records kept by the employer.

- ☛ Maintain a written program describing initial and refresher training.

NEW SECTION

WAC 296-817-01025 Make sure warning signs are posted for areas with noise levels above 115 dBA.

You must:

- ☛ Make sure warning signs are posted at the entrances or boundaries of all well-defined work areas where employees may be exposed to noise at or above 115 dBA (measured using a sound level meter with slow response).

- Warning signs must clearly indicate that the area is a high noise area and that hearing protectors are required.

NEW SECTION

WAC 296-817-01030 Arrange for oversight of audiometric testing.

You must:

- ☛ Make sure audiometric testing as described by WAC 296-817-030 is supervised and reviewed by one of the following licensed or certified individuals:

- An audiologist
- An otolaryngologist
- Another qualified physician.

- ☛ Make sure audiograms are conducted by one of the above individuals or by a technician certified by the Council of Accreditation in Occupational Hearing Conservation (CAOHC) and responsible to a qualified reviewer.

NEW SECTION

WAC 296-817-01035 Identify and correct deficiencies in your hearing loss prevention program.

You must:

- ☛ Use audiometric testing as your principal tool to identify program deficiencies

- ☛ Take appropriate actions when deficiencies are found with your program.

- A deficiency is indicated when:

- ② Any employee experiences measurable hearing loss indicated by a standard threshold shift

OR

- ② Any employee is not wearing appropriate hearing protection during an audit when auditing is used in place of baseline audiograms for short term employees (see WAC 296-817-040, Program assessment options).

Note: A standard threshold shift or audit deficiency does not necessarily indicate that a significant hearing loss has occurred. These criteria are intended to help identify where there may be flaws in your hearing loss prevention program that can be fixed before permanent hearing loss occurs.

There are additional statistical tools and tests that may be used to improve the effectiveness of your program. Staff

conducting audiometric testing and auditing may be able to suggest additional ways to improve your hearing loss prevention program and tailor it to your worksite.

You must:

☛ Evaluate the following, at a minimum, when responding to a standard threshold shift:

- Employee noise exposure measurements and conduct additional monitoring as necessary
- Noise controls in the work area and make appropriate corrections or adjustments
- The selection of hearing protection available and refit employees as necessary
- Employee training on noise and the use of hearing protection and conduct additional training as necessary.

Reference: You may use the option of auditing hearing protection (see WAC 296-817-040) for employees hired or transferred to jobs with noise exposure for less than one year. You may also use audiograms provided by a third-party hearing loss prevention program in some circumstances. Details of these program options are found in WAC 296-817-040, Program assessment options.

NEW SECTION

WAC 296-817-01040 Document your hearing loss prevention activities.

You must:

☛ Create and retain records documenting noise exposures. Include, at a minimum:

- Exposure measurements required by this chapter for at least two years and for as long as you rely upon them to determine employee exposure
- Audiometric test records for the duration of employment for the affected employees
- Hearing protection audits, if you choose to rely upon them, for the duration of employment of the affected employees.

Note: ☛ You need to keep as complete a record as possible. Records developed under previous rules or in other jurisdictions need to be kept, even when they do not fulfill the full requirements of this standard. Similarly, records found to have errors in collection or processing need to be kept if they provide an indication of employee exposure or medical condition not found in other records
☛ You may want to consider your other business needs, such as worker's compensation claims management, before discarding these records.

Reference: You need to follow additional requirements for records considered employee exposure or medical records. See chapter 296-62 WAC, Part B, Access to records for requirements for access to records, employee rights, and transfer of records.

NOISE MEASUREMENT AND COMPUTATION

NEW SECTION

WAC 296-817-020 Summary.

Your responsibility:

Conduct noise monitoring or measurement to evaluate employee exposures

in your workplace.

You must:

Make sure that noise-measuring equipment meets recognized standards

WAC 296-817-02005

Measure employee noise exposure

WAC 296-817-02010

Use these equations when estimating full-day noise exposure from sound level measurements

WAC 296-817-02015.

NEW SECTION

WAC 296-817-02005 Make sure that noise-measuring equipment meets recognized standards.

You must:

☞ Make sure that noise dosimetry equipment meets these specifications:

- Dosimeters must be equipment class 2AS-90/80-5 of the American National Rule Specification for Personal Noise Dosimeters, ANSI S1.25-1991, such dosimeters are normally marked "Type 2."

Note: Make sure any dosimeter you use:

Is Type 2 equipment that:
☞ Uses slow integration and A-weighting of sound levels.
☞ Has the criterion level set to 90 dB, so the dosimeter will report a constant 8-hour exposure at 90 dBA as a 100% dose.
☞ Has the threshold level set at 80 dB, so the dosimeter will register all noise above 80 dB.
☞ Uses a 5 dB exchange rate for averaging of noise levels over the sample period.

You must:

☞ Make sure that sound level meters meet these specifications:

- American National Standard Specification for Sound Level Meters, S1.4-1984, Type 2 requirements for sound level meters, such sound level meters are normally marked "Type 2."

③ For continuous noise measurements, the meter must be capable of measuring A-weighted sound levels with slow response

③ For impulse or impact noise measurements, the meter must be capable of indicating maximum C-weighted sound level measurements with fast response.

☞ Calibrate dosimeters and sound level meters used to monitor employee noise exposure:

- Before and after each day's use

AND

- Following the instrument manufacturer's calibration instructions.

Note: ☞ You may conduct dosimetry using an exchange rate less than 5 dB and compare the results directly to the noise evaluation criteria in Table 1

☞ For measuring impulse and impact noise you may also use a sound level meter set to measure maximum impulse C-weighted sound levels or peak C-weighted sound levels.

NEW SECTION

WAC 296-817-02010 Measure employee noise exposure.

IMPORTANT:

A noise dosimeter is the basis for determining total daily noise exposure for employees. However, where you have constant noise levels, you may estimate employee noise exposure using measurements from a sound level meter. Calculation of the employee noise exposure must be consistent with WAC 296-817-02015.

You must:

- ☛ Include all:
 - Workplace noise from equipment and machinery in use
 - Other noise from sources necessary to perform the work
 - Noise outside the control of the exposed employees.
- ☛ Use a noise dosimeter when necessary to measure employee noise dose
- ☛ Use a sound level meter to evaluate continuous and impulse noise levels
- ☛ Identify all employees whose exposures equal or exceed the Noise Evaluation Criteria in Table 1:

Table 1
Noise Evaluation Criteria

Criteria	Description	Requirements
85 dBA TWA ₈	Full-day employee noise exposure dose. If you have one or more employees above this level, you must have a hearing loss prevention program	<ul style="list-style-type: none">- Hearing protection- Training- Audiometric testing
90 dBA TWA ₈	Full-day employee noise exposure dose. If you have one or more employees above this level, you must reduce employee noise exposures in the workplace	Noise controls
115 dBA measured using slow response	Extreme noise level (greater than one second in duration)	<ul style="list-style-type: none">- Hearing protection- Signs posted in work areas warning of exposure
140 dBC measured using fast response	Extreme impulse or impact noise (less than one second in duration)	Hearing protection

NEW SECTION

WAC 296-817-02015 Use these equations when estimating full-day noise exposure from sound level measurements.

You must:

- ☛ Compute employee's full-day noise exposure by using the appropriate equations from Table 2 "Noise Dose Computation" **when** using a sound level meter to estimate noise dose.

Table 2
Noise Dose Computation

Description	Equation
Compute the noise dose based on several time periods of constant noise during the shift	<p>The total noise dose over the work day, as a percentage, is given by the following equation where C_n indicates the total time of exposure at a specific noise level, and T_n indicates the reference duration for that level.</p> $D = 100 \times \left\{ \frac{C_1}{T_1} + \frac{C_2}{T_2} + \frac{C_3}{T_3} + \dots + \frac{C_n}{T_n} \right\}$
The reference duration is equal to the time of exposure to continuous noise at a specific sound level that will result in a one hundred percent dose	<p>The reference duration, T, for sound level, L, is given in hours by the equation:</p> $T = \frac{8}{2^{\left\{ \frac{L-90}{5} \right\}}}$
Given a noise dose as a percentage, compute the equivalent eight-hour time weighted average noise level	<p>The equivalent eight-hour time weighted average, TWA_8, is computed from the dose, D, by the equation:</p> $TWA_8 = 16.61 \times \log_{10} \left\{ \frac{D}{100} \right\} + 90$

AUDIOMETRIC TESTING

NEW SECTION

WAC 296-817-030 Summary.

Your responsibility:

To conduct audiometric testing of employees exposed to noise to make sure that their hearing protection is effective.

You must:

Provide audiometric testing at no cost to employees

WAC 296-817-03005

Establish a baseline audiogram for each exposed employee

WAC 296-817-03010

Conduct annual audiograms

WAC 296-817-03015

Review audiograms that indicate a standard threshold shift

WAC 296-817-03020

Revise the baseline when annual audiograms indicate a persistent threshold shift or a significant improvement in hearing

WAC 296-817-03025

Make sure a record is kept of audiometric tests

WAC 296-817-03030

Make sure audiometric testing equipment meets these requirements
WAC 296-817-03035.

NEW SECTION

WAC 296-817-03005 Provide audiometric testing at no cost to employees.

You must:

☛ Provide audiograms, including any required travel or necessary additional examinations or testing, at no cost to exposed employees.

NEW SECTION

WAC 296-817-03010 Establish a baseline audiogram for each exposed employee.

You must:

☛ Conduct a baseline audiogram when an employee is first assigned to work involving noise exposures at or above 85 dBA TWA₈.

- Make sure this audiogram is completed no more than one hundred eighty days after the employee is first assigned

OR

- Make sure employee is covered by a hearing protection audit program (as described by WAC 296-817-040 and available as an alternative only for employees hired for less than one year).

Note: Employers who utilize mobile test units are allowed up to one year to obtain a valid baseline audiogram for each exposed employee. The employees must still be given training and hearing protection as required by this chapter.

You must:

☛ Make sure employees are not exposed to workplace noise at least fourteen hours before testing to establish a baseline audiogram.

- Hearing protectors may be used to accomplish this.

☛ Notify employees of the need to avoid high levels of nonoccupational noise exposure (such as loud music, headphones, guns, power tools, motorcycles, etc.) during the fourteen-hour period immediately preceding the baseline audiometric examination.

NEW SECTION

WAC 296-817-03015 Conduct annual audiograms.

You must:

☛ Conduct annual audiograms for employees as long as they continue to be exposed to noise at or above 85 dBA TWA₈.

Note: Annual audiometric testing may be conducted at any time during the work shift. By conducting the annual audiogram during the work shift with the employee exposed to typical noise for their job, the test may record a temporary threshold shift. This makes the test more sensitive to potential hearing loss and may help you improve employee protection before a permanent threshold shift occurs. A suspected temporary shift is one reason an employer may choose to retest employee hearing.

You must:

☛ Make sure each employee is informed of the results of his or her

audiometric test.

- Include whether or not there has been a hearing level decrease or improvement since their previous test.

- ☞ Make sure each employee's annual audiogram is compared to his or her baseline audiogram by an audiologist, otolaryngologist, another qualified physician, or the technician conducting the test to determine if a standard threshold shift has occurred.

- If the annual audiogram indicates that an employee has suffered a standard threshold shift, you may obtain a retest within thirty days and consider the results of the retest as the annual audiogram.

- ☞ Make sure that an audiologist, otolaryngologist, or other qualified physician sees any annual audiogram that indicates a standard threshold shift.

NEW SECTION

WAC 296-817-03020 Review audiograms that indicate a standard threshold shift.

You must:

- ☞ Make sure the health care professional supervising audiograms has:

- A copy of this chapter
- The baseline audiogram and most recent audiogram of the employee to be evaluated

- Background noise level records for the testing room

- Calibration records for the audiometer.

- ☞ Obtain an opinion from the health care professional supervising audiograms as to whether the audiograms indicate possible occupational hearing loss and any recommendations for changes in hearing protection

- ☞ Pay for any clinical audiological evaluation or otological examination required by the reviewer, if:

- Additional review is necessary to evaluate the cause of hearing loss

OR

- If there is indication of a medical condition of the ear caused or aggravated by the wearing of hearing protectors.

- ☞ Inform the employee in writing of the existence of a standard threshold shift within twenty-one calendar days of the determination.

- ☞ Make arrangements for the reviewer to communicate to the employee any medical conditions that are found unrelated to your workplace. This information is confidential and must be handled appropriately.

NEW SECTION

WAC 296-817-03025 Revise the baseline when annual audiograms indicate a persistent threshold shift or a significant improvement in hearing.

You must:

- ☞ Revise the baseline when a qualified reviewer determines:

- The standard threshold shift revealed by the audiogram is persistent

OR

- The hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram.

NEW SECTION

WAC 296-817-03030 Make sure a record is kept of audiometric tests.

You must:

☛ Retain a legible copy of all employee audiograms conducted under this chapter.

- Make sure the record includes:

- ③ Name and job classification of the employee
- ③ Date of the audiogram
- ③ The examiner's name
- ③ Date of the last acoustic or exhaustive calibration of the audiometer
- ③ Employee's most recent noise exposure assessment
- ③ The background sound pressure levels in audiometric test rooms.

NEW SECTION

WAC 296-817-03035 Make sure audiometric testing equipment meets these requirements.

You must:

☛ Use pure tone, air conduction, hearing threshold examinations, with test frequencies including as a minimum 500, 1000, 2000, 3000, 4000, and 6000 Hz

- Tests at each frequency must be taken separately for each ear
- Superaural headphones must be used.

☛ Conduct audiometric tests with audiometers (including microprocessor audiometers) that meet the specifications of, and are maintained and used according to, American National Standard Specification for Audiometers, S3.6-1996

☛ Perform the following audiometer calibrations:

- The functional operation of the audiometer must be checked before each day's use by testing a person with known, stable hearing thresholds by listening to the audiometer's output to make sure that the output is free from distorted or unwanted sounds. Deviations of 10 dB or greater must require an acoustic calibration

- Audiometer calibration must be checked acoustically at least annually to verify continued conformance with ANSI S3.6-1996. Test frequencies below 500 Hz and above 6000 Hz may be omitted from this check

- An exhaustive calibration must be performed at least every two years according to the American National Standard Specification for Audiometers, S3.6-1996. Test frequencies below 500 Hz and above 6000 Hz may be omitted from the calibration.

☛ Provide audiometric test rooms that are checked daily to verify conformance with the requirements of ANSI S3.1-1999 American National Standard Maximum Permissible Ambient Noise Levels for Audiometric Test Rooms except that ambient noise levels at 500 Hz must be 26 dB or less.

OPTIONS TO AUDIOMETRIC TESTING

NEW SECTION

WAC 296-817-040 Summary.

Your responsibility:

This section provides options to baseline audiometric testing for employees assigned to duties with noise exposures **less than one year**. These program options may also be used to provide added assessment of longer-term employees in addition to audiometric testing.

The requirements of this section apply only if you decide to use auditing or a third-party hearing loss prevention program and do not conduct baseline audiometric testing for those employees.

Hearing Protection Audits

You must:

Conduct hearing protection audits at least quarterly

WAC 296-817-04005

Make sure staff conducting audits are properly trained

WAC 296-817-04010

Assess the hearing protection used by each employee during an audit

WAC 296-817-04015

Document your hearing protection audits

WAC 296-817-04020

Third-Party Audiometric Testing

You must:

Make sure third-party hearing loss prevention programs meet the following requirements

WAC 296-817-04025

IMPORTANT:

Hearing protection audits are a tool for use in evaluating your hearing loss prevention program in cases where audiometric testing does not provide a useful measure. For example, if most of your employees are hired on a temporary basis for a few months at a time, audiometric testing may not identify the small changes in hearing acuity that could occur. Auditing provides an alternative to audiometric testing in these cases.

Third-party hearing loss prevention programs are full hearing loss prevention programs and are distinct from audiometric testing provided by third parties as part of your own hearing loss prevention program. These programs may be organized by labor groups, trade associations, labor-management cooperatives, or other organizations to cover a specific group of employees or combine efforts for several employers with common employees.

Although you remain responsible for the program, third-party programs can have at least two benefits over running your own program:

☞ The audiometric testing is portable between the participating employers so new testing will not be needed when an employee changes employers

☞ Employees who only work for short periods for any one employer can be monitored under the group program over a longer period of time increasing the effectiveness of the audiometric testing in preventing hearing loss for these

employees.

Auditing is not required unless you use it in place of baseline audiometric testing for employees hired for a period of **less than one year** and is permitted as a substitute for audiometric testing only for these employees.

NEW SECTION

WAC 296-817-04005 Conduct hearing protection audits at least quarterly.

You must:

☛ Conduct audits at least quarterly to provide a representative assessment of your workplace

- The assessment is representative if it:

③ Covers all processes and work activities in your business at full production levels

AND

③ Covers all employees present on the audit day.

- If your business is mobile or involves variable processes, auditing may need to be repeated more often than quarterly

- Auditing does not need to be repeated more than monthly as long as a reasonable effort is made to cover:

③ The activities with greatest exposure

AND

③ As many employees as possible.

☛ Assess exposures and hearing protection for the full shift for each employee covered at the time of the audit.

NEW SECTION

WAC 296-817-04010 Make sure staff conducting audits are properly trained.

You must:

☛ Make sure staff conducting hearing protection audits:

- Can demonstrate competence in:

③ Evaluating hearing protection attenuation

③ Evaluating hearing protector choices

③ Assessing the correct use of hearing protectors.

- Are certified by the Council for Accreditation in Occupational Hearing Conservation (CAOHC) or have training in the following areas:

③ Noise and hearing loss prevention

③ Washington state noise regulations

③ Hearing protectors

③ Fitting of hearing protectors

③ Basic noise measurement

③ Hearing loss prevention recordkeeping.

NEW SECTION

WAC 296-817-04015 Assess the hearing protection used by each employee during audits.

You must:

☛ Confirm that:

- Current site conditions during audits are consistent with conditions existing during noise monitoring
- The hearing protection used by the employee is sufficient and appropriate for the conditions
- The hearing protection is worn properly
- The employees are satisfied with the performance and comfort of the hearing protection.

NEW SECTION

WAC 296-817-04020 Document your hearing protection audits. You must:

☛ Keep a record of audit results for each employee assessed for the length of their employment and for the length of time you will rely upon the audit results

☛ Include the following information in the record:

- The make and model of the hearing protector(s)
- The size of the protector(s)
- Average noise exposure of the employee
- Any problems found with use of the hearing protection
- Any comments or complaints from the employee regarding the hearing protection.

THIRD-PARTY AUDIOMETRIC TESTS

NEW SECTION

WAC 296-817-04025 Make sure third-party hearing loss prevention programs meet the following requirements.

IMPORTANT:

Third-party hearing loss prevention programs are intended for short term employees hired or assigned to noise **for less than one year and for seasonal employees.** However, other employees may be included as long as you meet all requirements for hearing loss follow-ups and recordkeeping.

You must:

- ☛ Make sure that the third-party program is:
 - Equivalent to an employer program as required by this chapter
- AND
 - Uses audiometric testing to evaluate hearing loss.
- ☛ Make sure a licensed or certified audiologist, otolaryngologist, or other qualified physician administers the third-party program
- ☛ Make sure the third-party program has written procedures for:
 - Communicating with participating employers of program requirements
 - Follow-up procedures for detected hearing loss
 - Annual review of participating employer programs.
- ☛ Make sure the following program elements are corrected by you or the third-party program when deficiencies are found:
 - Noise exposures
 - Hearing protection
 - Employee training
 - Noise controls.
- ☛ Obtain a review of your hearing loss prevention program at least once per year, conducted by the third-party program administrator or their representative, in order to:
 - Identify any tasks needing a revised selection of hearing protection
- AND
 - Provide an overall assessment of the employers' hearing loss prevention activities.

NEW SECTION

WAC 296-817-050 Noise definitions.

A-weighted - An adjustment to sound level measurements that reflects the sensitivity of the human ear. Used for evaluating continuous or average noise levels.

Audiogram - A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

Audiologist - A professional, specializing in the study and rehabilitation of hearing, who is certified by the American Speech, Hearing, and Language Association or licensed by a state board of examiners.

Baseline audiogram - The audiogram against which future audiograms are compared. The baseline audiogram is collected when an employee is first assigned to work with noise exposure. The baseline is then revised if persistent hearing loss is found.

Continuous noise - Noise that is consistent with peaks spaced no more than one second apart. Continuous noise is measured using sound level meters and noise dosimeters with the slow response setting.

Criterion sound level - A sound level of ninety decibels. An eight-hour exposure to constant 90 dBA noise is a one hundred percent noise dose exposure.

C-weighted - An adjustment to sound level measurements that evenly weights frequencies within the range of human hearing. Used for evaluating impact or impulse noise.

Decibel (dB) - Unit of measurement of sound level. A-weighting, adjusting for the sensitivity of the human ear, is indicated as "dBA." C-weighting, an even reading across the frequencies of human hearing, is indicated as "dBC."

Fast response - A setting for a sound level meter that will allow the meter to respond to noise events of less than one second. Used for evaluating impulse and impact noise levels.

Hertz (Hz) - Unit of measurement of frequency, numerically equal to cycles per second.

Impulsive or impact noise - Noise levels which involve maxima at intervals greater than one second. Where the intervals are less than one second, the noise levels must be considered continuous. Impulse and impact noise are measured using the fast response setting on a sound level meter.

Noise dose - The total noise exposure received by an employee during their shift. It can be expressed as a percentage indicating the ratio of exposure received to the noise exposure received in an eight-hour exposure to constant noise at 90 dBA. It may also be expressed as the sound level that would produce the equivalent exposure during an eight-hour period (TWA₈).

Noise dosimeter - An instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.

Otolaryngologist - A physician specializing in diagnosis and treatment of disorders of the ear, nose and throat.

Qualified reviewer - An audiologist, otolaryngologist, or other qualified physician who has experience and training in evaluating occupational audiograms.

Slow response - A setting for sound level meters and dosimeters in which the meter does not register events of less than about one second. Used

for evaluating continuous and average noise levels.

Sound level - The intensity of noise as indicated by a sound level meter.

Sound level meter - An instrument that measures sound levels.

Standard threshold shift (STS) - A hearing level change, relative to the baseline audiogram, of an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear.

TWA₈ - Equivalent eight-hour time-weighted average sound level - That sound level, which if constant over an eight-hour period, would result in the same noise dose measured in an environment where the noise level varies.